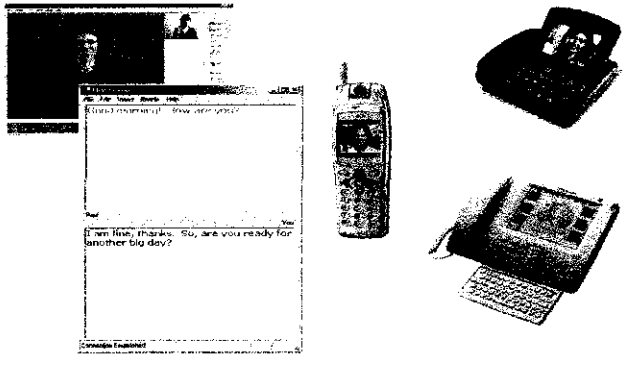
Ultimate Goal – Total Conversation

- To allow any device to support the transmission of video and/or text signals
- To allow a user on a PC connected to an IP network to chat with a user on a legacy PSTN TTY device
- To improve communications with the widespread adoption of video
- To allow a user with a wireless PDA to communicate with anybody in the world
- To *not require* special tools for communications



Conclusion

Enable Video, Text, and Voice Communications.

So you can Sign, Type, or Speak.

You Decide.

FCC VoIP Solutions Summit

Friday, May 7, 2004

Brenda Battat M.S.

Self Help for Hard of Hearing People

The Need

- 54 m Americans with disabilities (1out of 5)
- 1 trillion $ disposable income
- Hearing Loss the largest disability
- 28 m in U.S (1 in ten of population)
- People losing their hearing earlier
- One baby boomer every 7 seconds turns 50

VoIP Opportunities

- Convergence of telephony, video and data
- Redundancy becomes a reality
- Phone service can be cheap

Features that People who are Hard of Hearing Need for Access

- Clear, strong, high quality signal for speech intelligibility
- Adequate volume control easily manipulated
- Telecoil compatibility without interference
- Simultaneous voice and text display with adjustable text sizes
- Audio output jack with sufficient power for neck loop, headset, or other couplers for two-ear listening

Features - Continued

- High quality video optimized for speech reading (30 frames per second, or faster)
- Simultaneous video and audio to combine speech reading and audio signal
- Ability to add text to voice call in midstream of incoming calls
- Ability to initiate three-way calling at any time, for both incoming and outgoing calls

Features - Continued

- Emergency services made accessible in realtime through video, voice, and text
- Ability to connect Internet relay services to the call at any time
- Compatibility with user's own speech recognition software (enable hearing callers to use their own speech recognition software to transcribe their speech)

Barriers to Access

- Existing hardware not accessible
- Lax enforcement of telecommunications laws
- Uncertainty where VoIP fits in the telecommunications structure
- Need for standards to meet the access goals

Recommendations

- Capitalize on inherent and unique features of VoIP
- Wipe the telecommunications slate clean
- Remain committed to public interest objectives
- E911 be a major focus

8x8, Inc.

VoIP Solutions Summit

Focus on Disability Access Issues

May 7, 2004

Barry Andrews

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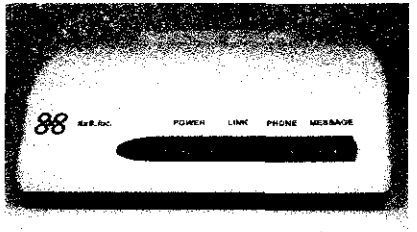
http://www.packet8.net

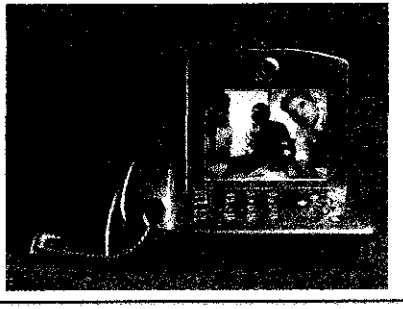
IP Enabled Services

- Continuing rapid adoption of Broadband Internet access is a major factor driving the growing VoIP market
- Services (Voice, Video, and Text) can be delivered reliably and cost effectively over IP networks
- Challenges presented by IP Enabled Services:
  - Usability
  - Quality
  - Interoperability
  - Public Service and Safety (911)
- **Packet8 - An Example Voice & Video over IP Service**
- **Voice, Video and Text in a universal service over IP with global interoperability presents the opportunity to improve personal communication for everyone**

Packet8 – Voice & Video over IP Service

- Packet8 is an end-to-end voice and/or video communication service that operates over the internet
- Allows calls to or from any phone in the world (including traditional telephones). Uses regular telephone numbers.
- Enables high quality voice and video calls
- Subscribers can choose the use of a traditional analog telephone, their computer or a videophone to place calls
- Extremely simple to install (requires only a terminal adapter or a videophone)
- Set up, managed and billed via the Internet

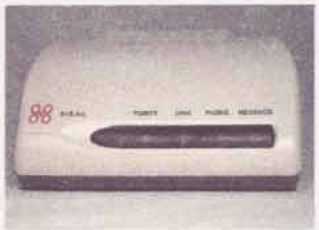




8x8, Inc.

How Packet8 Works

Cordless phone



DTA310

Home Router

DSL or Cable Modem

Internet

Videophone

Traditional Phone Network

Challenges presented by IP Enabled Services

Usability

- Plug & Play for widespread deployment
  - no complex configuration
  - Dialtone and dialing plans similar to what users expect from using existing communication services (telephone/TTY)
- several IETF drafts for dealing with passing real time data through NATs/firewalls

Quality

- Signing/lip reading requires high quality video
  - eg. 30 frames/sec at CIF (352x288) or higher resolution
  - depending on video codec may require up to 1 Mbps to achieve high quality
- Compressed audio and video data generally have symmetric bandwidth requirements but
  - DSL downstream bandwidth is often 384 kbps or greater while typical DSL upstream bandwidth is 128 kbps
  - Cable broadband downstream might be 1 Mbps while the upstream is limited to 256 kbps
- ITU-T H.263 common video codec for videoconferencing applications
- newer ITU-T H.264 video codec can achieve same quality as H.263 at about half the bandwidth at the expense of greater processing/memory

Challenges presented by IP Enabled Services

Quality (cont.)

- Intelligent jitter buffer/error concealment methods can be used for voice and video over less than ideal packet networks

Interoperability

- ITU-T H.323 mature standard as far as video call control but ...
- Marketplace may set the final standard
  - IETF SIP Call control
  - ITU-T H.263 and H.264 Video
  - ITU-T and IETF Text protocols
  - ITU-T G.729a Audio
- Voice and Text gateways for PSTN/TTY connectivity

Public Service and Safety (911)

- Rural access limited by availability of broadband
- Voice, Video & Text over IP not geographically tied – mobile VoIP users
- IP enable PSAPs for next generation voice, video and text services

FCC VoIP Solutions Summit

Potential Barriers of IP-Enabled Services

Affecting People who are Deaf, Late-Deafened, or Deaf-Blind

Friday, May 7, 2004

Claude L. Stout, Executive Director
Telecommunications for the Deaf, Inc.

Functional Equivalency

- IP-enabled services such as VRS bring us near-functional equivalency of voice calls
- Traditional TRS is based on old technology
- VRS calls are seamless and quicker
- VRS calls convey nonverbal information
- VRS should be the new standard

Policy Issues

- "255" access regulations needed even if no other regulations are used
- Broadband policy needs to account for video telephony
- Local and Interstate TRS funding mechanisms needs to be revamped to collect VoIP revenue
- VoIP does not recognize boundaries

Market Economics

- Deaf & Hard of Hearing people in all economic brackets
- Access features in all, not just high-end products and services
- We should not be stuck with old pre-IP products and services
- Access to technology means freedom for people with disabilities

R & D Collaboration

- Our needs must be considered as part of initial research and development, not an "afterthought"
- Most companies have not contacted us consumer organizations for
  - Needs assessment
  - Design and development
  - Marketing activities
- We can test new products and services, and help implement new ideas

Feature Options

- Wide range of hearing loss and vision loss
- IP Services not limited to TTY or text
- Additional capabilities possible
  - Enhanced audio and text
  - Video and tactile features
- Need ability to change text display
  - Type of fonts
  - Font color and size
  - Background color and opacity
  - Peripheral devices such as Braille readers

VoIP Integrity Issues

- Data is broken into packets and sent over Internet – is it always intact?
- Consumers agree to 1% error rate
- Incomplete information can be fatal
- Security concerns must be addressed
  - Scams and fraudulent use
  - Firewalls hinder the use of accessible technology

9-1-1 Technologies

- Public Safety responders must adapt to new technologies
- ADA only covers TTY and VCO calls
- Relay calls cause delays
- E-mail, pagers, instant messaging, relay and video not supported
- Location identifiers inadequate for IP technologies